User Manual

XORAYA ASU

Version: 1.0.1

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1 Introduction

1.1 About this user manual

- Read this user manual completely before using the ASU for the first time.
- Please consider this user manual as part of the product and make sure it is easily accessible.
- Provide this user manual upon transfer of the ASU to a third party.
- Request a replacement user manual upon loss.
- This user manual contains important information for safe, proper and efficient operation of the ASU. Following this user manual strictly helps in avoiding dangers, reduces repair costs and downtime, while increasing the reliability and service life of the ASU. It should be read, understood and applied by those using the ASU according to the user manual.

Pay particular attention to:

- the safety section (➔ Safety and warranty)
- the text warnings of each section

Bear in mind that this user manual does not replace your responsibility as an ASU user.

Subject to change without prior notice. This applies especially to changes relating to technical enhancements.

1.2 Validity of the user manual

This user manual applies to the XORAYA Advanced Storage Unit, or just ASU, by X2E GmbH. The exact type specifications can be found on the nameplate.
(➔ Identification**Fehler! Verweisquelle konnte nicht gefunden werden.**)

The following instructions are key to operate the ASU and must be strictly observed under all circumstances.

Information in this user manual is subject to change without prior notice due to further technical developments and subsequent modifications. New features may not be described yet or may be described incompletely. Please ensure that you have the most current and complete user manual.

Users can change certain properties and functions via the included software, so that the ASU behaves differently than described herein. Users may revert to factory defaults at any time by pressing the default button on the front panel or via the supplied software.

1.3 Representation conventions

Representation	Meaning
▶ < Instruction >	User-executed action
▶ <Instruction option 1> *or* ▶ <Instruction option 2>	Instruction options
☑ < Outcome >	Outcome of an action or a series thereof
▪ <Level 1a> – <Level 2a> – <Level 2b> ▪ <Level 1b>	Maximum two-level enumeration
➔ <Cross-reference>	Clickable cross-reference to a section or heading (In most Windows programs, you can return to the previous position by pressing *ALT + Left arrow*)
<Text>	Housing label, GUI element or other highlighting
#	Placeholder for numbers
(1) bzw. **(A)**	Reference to numbered markers in graphics

1.4 Pictograms

This manual uses pictograms to highlight and ensure faster recognition of important or especially useful information.

Warning:

These types of symbols indicate warnings which must be observed.

The following subsections contain a description of the basic structure and relevance of different warning levels.

General information:

This symbol indicates general information.

General information includes application tips and particularly useful information excluding warnings or hazards.

1.4.1 Meaning of warnings

Warnings are systematized according to the severity and probability of their occurrence.

CAUTION

This pictogram in conjunction with the word *Caution* warns of a potentially dangerous situation, or an unsafe procedure.

Ignoring this warning information could result in injury or property and environmental damage.

WARNING

This pictogram used in conjunction with the word *Warning* warns of a potentially imminent danger to the health and lives of people.

Ignoring this warning could cause serious personal injury, including death in the worst case.

DANGER

This pictogram used in conjunction with the word *Danger* warns of an imminent danger to the health and life of people.

Ignoring this warning causes serious personal injury, including death in the worst case.

1.4.2 Structure of warnings

Warnings are separated from the surrounding text by lines set above and below.

SIGNAL WORD

Danger types and sources

Explanation and consequence of danger

▶ Actions to prevent danger

2 Safety and warranty

The XORAYA ASU was developed according to the latest state of the art and offer outstanding safety levels. During operation, however, this safety level can only be achieved if the user complies with all relevant safety regulations.

Upon measuring, safety regulations of the professional associations must be observed.

Please contact an expert or the service of X2E GmbH when in doubt about the operation, safety, or connection of the ASU.

2.1 Intended use

The ASU is used for real-time acquisition of data communication in automotive bus systems. You can perform measurements and save them for later analysis.

- The ASU is intended for use only by trained personnel.
- The ASU must not be used in residential or living areas. Its use is strictly limited to industrial environments.
- The ASU must not be used in hazardous areas.
- Always operate the ASU within its technical specifications. (➔ Technical data)
- The ASU may only be used under the conditions and for the purposes for which it was designed.
- Repairs may only be carried out by trained personnel of X2E GmbH.
- Operational safety cannot be guaranteed after modifications or conversions.
- Except for data buses, never perform measurements on live parts.
- The 4-mm plug of the power supply cable delivered must never be introduced in low-voltage sockets.
- The data lines may be extended up to a maximum of 30 m (USB: 3 m).
- The voltage supply may be extended up to a maximum of 3 m with sufficient cross-section.

2.2 Safety label on the device

You find the following safety label on the ASU top side:

Burning hazard due to hot surfaces

Continuous operation can strongly heat up the ASU. As a result, it can burn the skin on the hands when touching it.

- ▶ Wear temperature-resistant ESD gloves when in contact with the ASU.

2.3 General safety instructions

DANGER

Electric shock caused by damage to components

Any damage to the ASU, power source or connection cable may cause an electric shock.

- ▶ Switch on the ASU only if all components appear undamaged.
- ▶ Only commission the ASU after a proper installation or repair.
- ▶ Check the connecting cable regularly for defects to prevent damage to the power source.
- ▶ Always install the ASU in de-energized status.

WARNING

Defects influencing the environment

The incorrect ASU configuration can lead to the temporary or permanent functional failure of connected vehicles.

Connected vehicles being operated on public roads bear an increased risk of injury and damage.

- ▶ If available, use configuration templates provided by the vehicle manufacturer.

CAUTION

Device damage due to short circuit

Bent connector pins pose a short circuit risk. This can lead to abnormal behavior or destruction of the ASU.

Likewise, devices connected to the measurement setup may be also compromised.

- ▶ Make sure that connector pins are not bent.
- ▶ Check the ASU regularly for any deficiencies.

CAUTION

Device damage due to electrostatic discharge

Electronic components can be destroyed by electrostatic discharge.

- ▶ Avoid touching connectors and connector pins.
- ▶ Ground yourself before carrying the ASU in your hands.
- ▶ Store and operate the ASU in an ESD-compliant environment.


CAUTION

Device damage due to overheating

Overheating can lead to abnormal behavior or destruction of the ASU.

- Do not operate the ASU outside the specified temperature range.
- Never operate the ASU near heat sources.
- Please ensure adequate air circulation for operation.
- Do not cover the ASU, especially the ventilation slots, with other objects.


CAUTION

Device damage due to shocks

Excessive vibration can lead to abnormal behavior or destruction of the ASU.

- Avoid exposing the ASU to excessive vibration.


CAUTION

Device damage due to pollution

Avoid any contamination in plugs and sockets to ensure a reliable contact.

- Keep the ASU clean.


CAUTION

Device damage due to device opening

Unauthorized opening of the ASU can lead to abnormal behavior or destruction of the device.

- Never open the ASU.
- Contact X2E GmbH should maintenance and repairs be required.


CAUTION

Device damage due to penetration of dust or liquids

Staub oder Feuchtigkeit im Inneren der ASU kann zu deren Fehlverhalten oder Zerstörung führen.

- Only operate the ASU with a closed housing.
- Make sure that no moisture penetrates through the ventilation slots.
- Operate the ASU in a low-dust environment.
- Do not operate the ASU outdoors.
- Do not operate the ASU outside the specified temperature range.
- Turn off the ASU and disconnect it from the power supply before you start cleaning.

CAUTION

Device damage due to improper device shutdown

Disconnecting the power supply during operation may cause data loss and destruction of the ASU.

- ▶ Never disconnect the ASU from the power supply while in operation.
- ▶ Ensure proper connector seating and tighten the screws if possible.
- ▶ Only shut down the ASU via software or the power button on the front panel.
- ▶ Pull the black plug connected to ground last when disconnecting the ASU from the power supply.

CAUTION

Safety defects due to incorrect accessories and spare parts

Accessories and spare parts that have not been recommended by X2E GmbH negatively affect the safety, functionality and precision of the ASU.

X2E GmbH shall assume no responsibility whatsoever or honor any warranty for damages arising from non-recommended accessories and spare parts or incorrect use.

- ▶ Use only accessories recommended by X2E GmbH and original spare parts.

2.4 Product liability

In the following cases, the intended protection of the ASU may be adversely affected. The liability is then transferred to the user.

- The ASU is not used according to the manual.
- The ASU is used outside the scope described in this manual.
- The user modifies the ASU without proper authorization.

2.5 Terms of use

If the installation of the ASU in a vehicle is intended for operation on public roads, the user and the X2E GmbH must jointly perform a risk analysis beforehand. This analysis must consider the specific installation requirements and the valid factory standards at the user's site.

Conditions set forth in framework contracts shall apply.

The ASU is continuously developed. The development process relies on the cooperation between the user and X2E GmbH.

2.6 Warranty

The warranty period is 12 months. Device batteries, whether internal or external, are excluded from the warranty. The warranty also excludes damages arising from improper handling.

X2E GmbH guarantees that the software as described herein is basically usable. X2E GmbH, however, shall assume no liability for the correctness and the continued use of the software, given that the current state of the art prevents the production of software suitable for all combinations of hardware and software.

In particular, X2E GmbH cannot guarantee that the software meets any user requirements, or that it is compatible with any programs the latter may have selected. Responsibility for program selection and the consequences of program use lie entirely with the user.

X2E GmbH shall assume no liability for damages arising from faulty recorded data, as well as damage due to incorrect configuration, data entry and data transfer.

After configuring, we recommend to verify the proper operation and plausibility of each sensor using some manual measurement over the entire measuring range.

X2E GmbH shall assume no further liability. This limitation of liability also applies to the personal liability of employees, representatives and organs of X2E GmbH.

2.7 FCC notice

This equipment has been tested and found to comply with the limits for a *Class A* digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at one's own expense.

Changes or modifications made to this equipment not expressly approved for compliance may void the FCC authorization to operate this equipment.

3 Product description

The XORAYA ASU is a state-of-the-art FPGA-based memory unit designed for high-speed data recording at rates of up to 32 Gbit/s. It can seamlessly connect via 10-Gigabit Ethernet with various streaming devices such as the XORAYA Probe and the XORAYA N4000+, making it highly versatile for a wide range of applications.

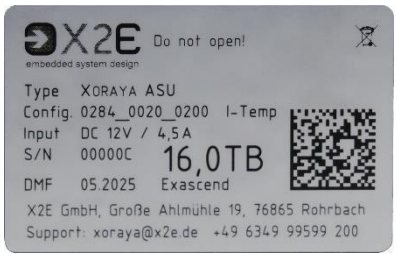
Support for the ASAM CMP protocol ensures reliable and standardized data communication and management. Additionally, multiple ASU devices can be used in parallel, significantly increasing both the writing speed and the total storage capacity. This scalability makes the XORAYA ASU the ideal choice for demanding environments where large volumes of data need to be logged and processed quickly and efficiently.

Product highlights:

- High-speed data recording at up to 32 Gbit/s
- Integrated recording, storage, and retrieval device
- Outstanding performance per watt
- Supports ASAM CMP 1.0
- Storage sizes of 8, 16 or 32 TB available

3.1 Identification

The nameplate is located on the bottom of the ASU.



It contains the following information:

- Type — Device type
- Config. — First block: Product ID
  0284 External storage devices
  Second block: Product variant
  0020 XORAYA ASU
  Third block: Hardware revision
- Input — Maximum current consumption at given standard input voltage
- S/N — Unique serial number
- DMF — Date of manufacture
- Size and manufacturer of the built-in SSD

3.2 Scope of delivery

The following components are part of the delivery:

- XORAYA ASU
- Power supply cable
- Software
- User manual

Optional accessories:

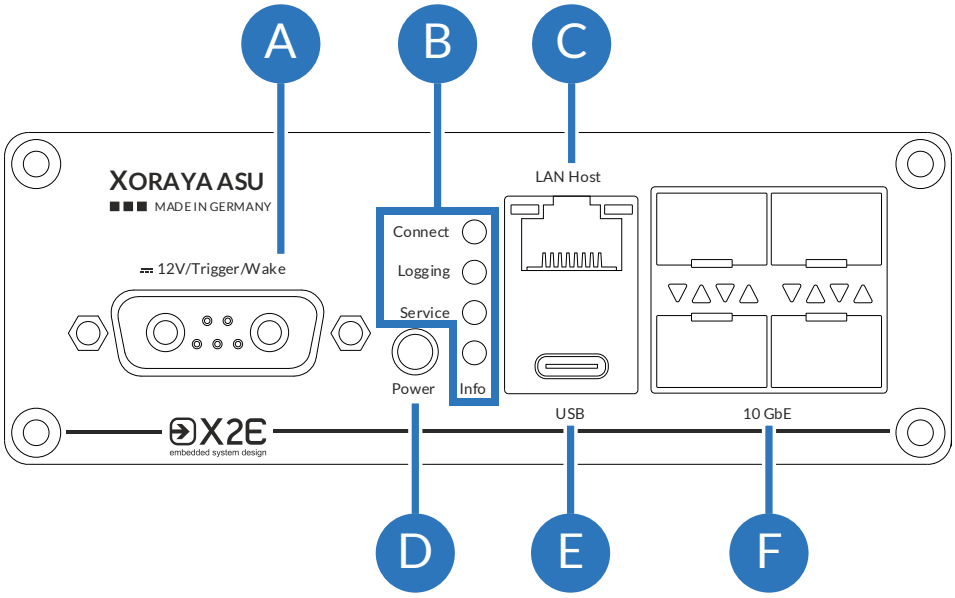
- Rack mount

Supported third-party accessories:

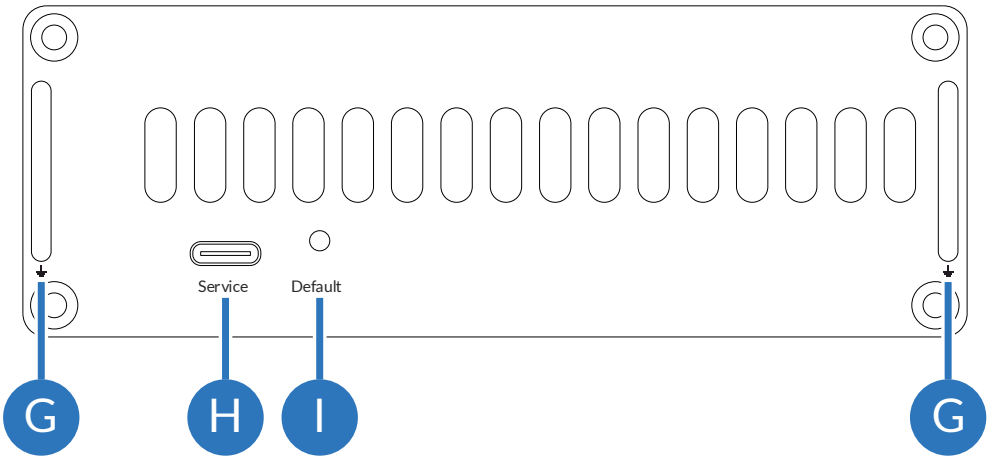
- SFP+ module FTLX8573D3BTL by Finisar

3.3 Connections and controls

Front side



Back side



A	12V/Trigger/Wake port	F	10 GbE interfaces
B	General status LEDs	G	Ground contacts
C	LAN Host interface	H	Service interface
D	Power button	I	Default button
E	USB interface		

12V/Trigger/Wake port (A):

By default, the ASU must be supplied with 12 V DC voltage. Optionally, it can also operate with power supplies in a certain specified range. (➔ Technical data)

Alternatively, the power supply is also possible via the USB interface **(E)** and USB PD Profile 4 (20 V/3 A).

Via software, you can define triggers that activate certain actions. A signal level of +12 V at the trigger input corresponds to the activation of this trigger.

The wake input allows waking up the ASU from sleep. To that end, the wake signal must shift from 0 V to +12 V.

General status LEDs (B):

These LEDs indicate the operating status of the ASU.

LED	Color	Meaning
Connect	Green	Connection between ASU and software is established
Logging	Blue Yellow Green	Logging on storage medium Stream logging Logging on storage medium and stream logging
Service	Red	Lights up constantly when the ASU is in firmware update or recovery mode Displays different error codes by flashing
Info	Blue Green Yellow Red	PTP status: Master PTP status: Synchronized PTP status: Divergent PTP status: Unsynced

LAN Host interface (C):

This freely configurable 1 GbE interface can perform one of the following tasks:

- Configuration and control
- Direct recording of Ethernet data
- Connecting to other devices such as probes to create a distributed system

The LEDs indicate whether there is a connection (right, yellow) and whether there is activity (left, green).

Power button (D):

Turn on the ASU with this button. If you press the button while the ASU is on, the device switches to sleep mode.

USB interface (E):

This interface is used either to connect peripherals or to provide an alternative power supply (USB PD) in addition to the conventional 12V/Trigger/Wake **(A)**.

A USB power adapter (Power Delivery Profile 4, 20 V/3 A) is required for the power supply.

The possible use cases for connecting peripherals are:

- Firmware update via USB flash drive (XSWU file)
- USB Wifi adapter
- GPS receiver
- USB-to-serial adapter with FTDI chipset

10 GbE interfaces (F):

These freely configurable 10 GbE interfaces (10GBase-R standard) can perform one of the following tasks:

- Configuration and control
- Direct recording of Ethernet data
- Connecting to other devices such as probes to create a distributed system

The LEDs indicate for each interface whether there is a connection (left, green). The tip of each triangular LED points to the assigned interface.

X2E recommends the SFP+ module FTLX8573D3BTL by Finisar.

Ground contacts (G):

These contacts are suitable for secure grounding.

Service interface (H):

In case of errors, this interface is used as a debugging interface by the X2E support team.

Default button (I):

Press the default button with a pointed object for at least 3 seconds to reset all ASU settings to factory defaults.

4 Commissioning

4.1 Unpacking

Upon unpacking, check whether the delivery is complete and all components appear in perfect condition. (➔ Scope of delivery)

- ▶ Please contact X2E immediately should the delivery be incomplete or upon damaged components.
- ▶ Do not put any defective component into operation.

X2E can only accept your complaint and replace the affected component upon prompt notification.

Keep original packaging

Keep the original packaging and packing materials for later storage or further transport.

4.2 Selecting an installation location

Select a location for the ASU according to the following criteria:

- Proximity to power supply, which also needs to be easily accessible
- Sufficient distance to other devices
- Solid and stable surface
- Ambient temperature in required range
- Sufficient airflow
- In particular the front, back and ventilation slots must not be covered

4.3 Installing the ASU

X2E does not have any special requirements for installing the ASU. However, install the ASU in the vehicle in such a way as to avoid damage or danger at all times.

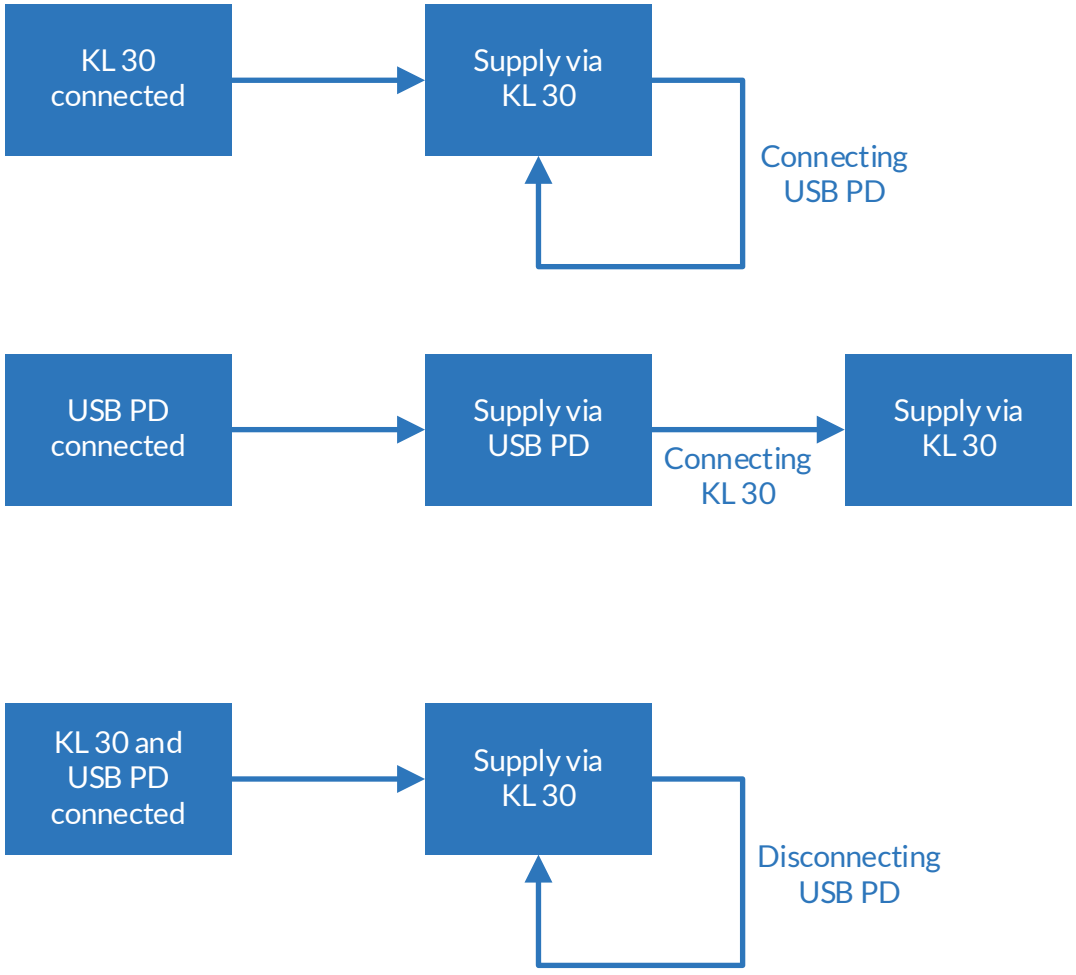
4.4 Connecting the ASU

4.4.1 Power supply

There are two power supply options for the ASU:

- Via the 12V/Trigger/Wake port **(A)**, also referred to as **KL30**
- Via the USB interface **(E)**, also referred to as **USB PD**

KL30 is the prioritized power supply, so when both options are connected at the same time, the ASU is supplied via KL30. This also applies, for example, if KL30 is connected while the USB PD connection already exists. Then the power supply automatically switches to KL30.



DANGER

Electric shock due to improper connection of the power supply

Introducing the 4-mm plugs of the supplied power cable into low-voltage sockets can be fatal.

- Never introduce the 4-mm plugs into low-voltage sockets.
- Connect the supplied power cable only to a power source that meets the prescribed technical conditions.

CAUTION

Device damage due to incorrect power supply

Using an incorrect power supply can lead to abnormal behavior or destruction of the ASU.

- Please ensure correct polarity upon connection.
- Make sure that the power supply used meets the prescribed technical conditions.
- Make sure that the power supply lies within permissible operating voltage of the ASU.
- Please note the allowable voltage level when feeding external signals.

CAUTION

Device damage due to faulty connection

When connecting with live contacts, transient fault currents with entrained mass may arise on interface connections which have been already connected.

- Please ensure contacts are de-energized when connecting the ASU to the power supply.

CAUTION

Device damage due to incorrect connection sequence

The incorrect connection sequence can lead to abnormal behavior or destruction of the ASU.

- Please note the correct connection sequence from top to bottom.

Connecting with the power supply cable by X2E:

- Connect the power supply cable to the 12V/Trigger/Wake port **(A)**.
- Tighten the connector screws.
- Connect the black plug of the cable to 0 V or ground.
- Connect the red plug to a suitable power supply.

Connecting with the USB power adapter (Power Delivery Profile 4, 20 V/3 A):

- Connect the power adapter to the USB interface **(E)**.
- Connect the power adapter to a standard power outlet.

Once the supply voltage is established, the ASU turns on and displays its operational status via the power button LED **(D)**.

CAUTION

Device damage due to improper device shutdown

Disconnecting the power supply during operation may cause data loss and the destruction of the ASU.

- Never disconnect the ASU from the power supply while in operation.
- Ensure proper connector seating and tighten the screws if possible.
- Only shut down the ASU via software or the power button on the front panel.
- Pull the black plug connected to ground last when disconnecting the N2000 from the power supply.

4.4.2 Interfaces

- Connect the ASU via the Ethernet interfaces **(C)** or **(F)** with other devices of the distributed system.

Data loss due to disconnecting

To avoid data loss, never disconnect the ASU from the connected data buses while recording is in progress.

Also make sure that all connectors are firmly attached and the screws are tightened.

4.4.3 PC/Switch

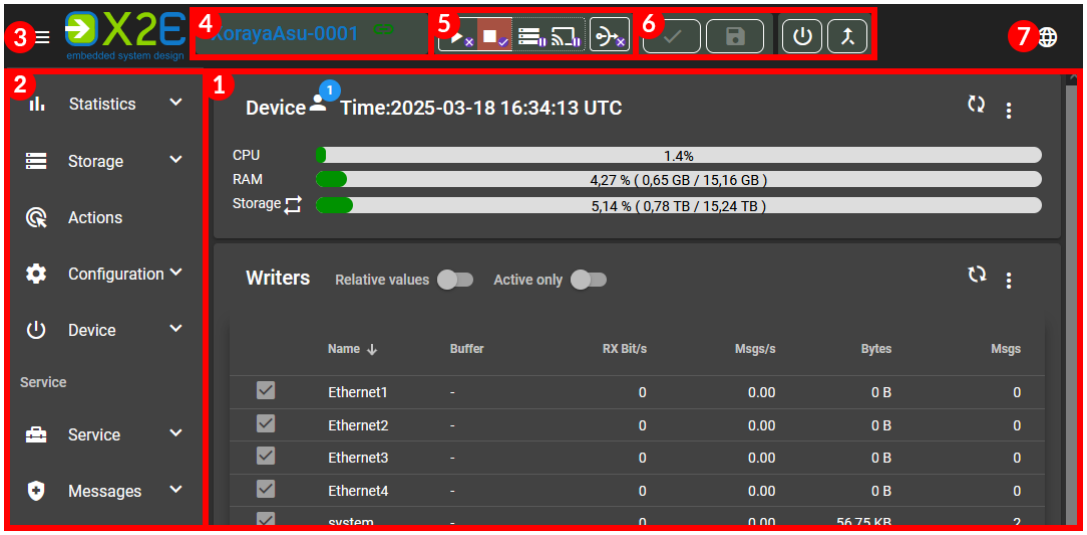
- Connect a network cable to a switch or a PC.
- Connect the network cable to one of the Ethernet interfaces **(C)** or **(F)**.

5 WebGUI

A browser-based WebGUI is available for configuring and controlling the ASU.

5.1 Layout

The WebGUI is structured as follows:

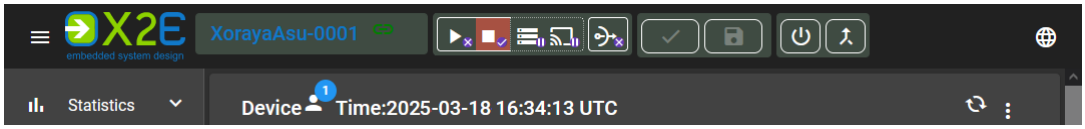


Nummer	Funktion
1	Main area, content depends on the selected menu item **(2)**
2	Navigation menu with submenus
3	Hide, minimize or maximize the navigation menu **(2)**
4	Name of the connected device
5	Control logging (➔ Data logging) and configuration mode
6	Additional commands across all menus, such as saving changes, turning off the device
7	Settings of the WebGUI itself, e.g. mode (light, dark), language

5.2 Connecting

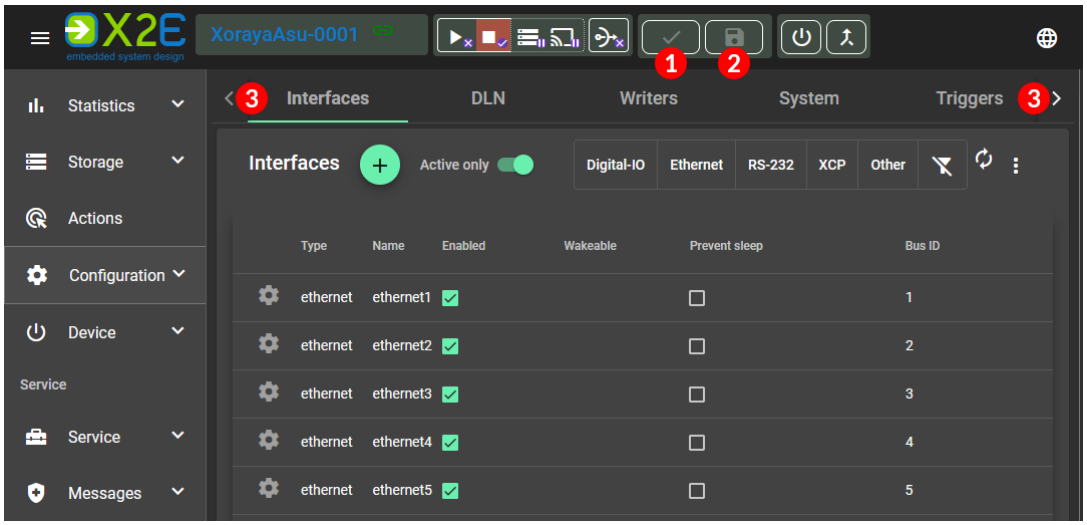
- ▶ Perform all commissioning steps. (➔ Commissioning)
- ▶ Open your web browser.
- ▶ Enter the IP address (factory setting 192.168.0.1) of the ASU and confirm.

☑ You are connected to the ASU.



5.3 Configuration

The ASU is configured in the various categories or via the detail view with its complete configuration tree.



Number	Function
1	Temporarily apply the local changes (until the next ASU restart)
2	Permanently store unsaved changes on the ASU
3	Change category

You can change categories (interfaces, DLN, writers, etc.) either in the upper area **(3)** or by expanding *Configuration* in the navigation menu on the left.

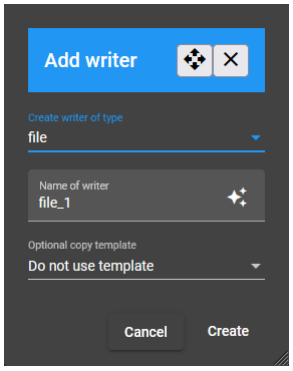
Adding an element is described below using the *Writers* category as an example.

Writers:

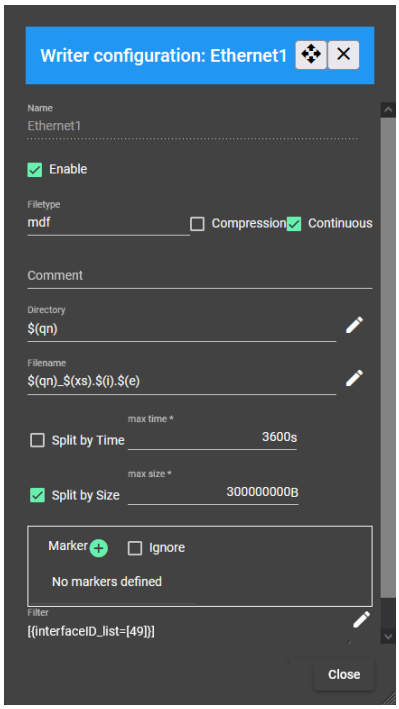
Writers are responsible for saving the received data at the interfaces into specific output formats.

Number	Function
1	Add writer

▶ Click *Add writer* **(1)**.



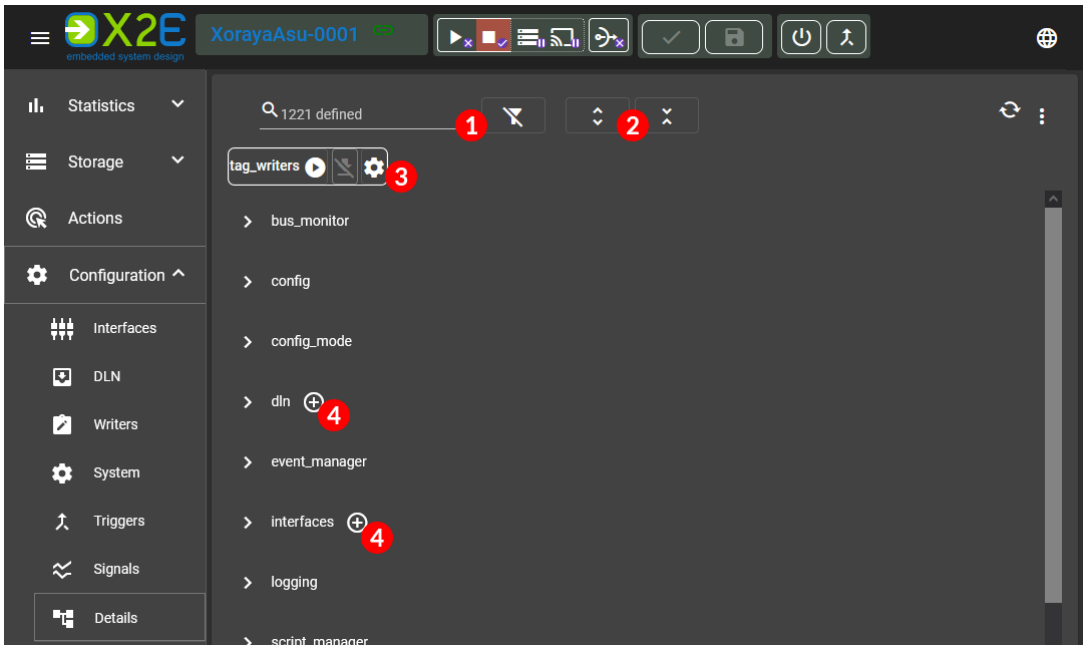
▶ *Create* a writer of type *channel*, *file*, *plp* or *ring_file*.



- Among other settings, assign a name for the writer, a target directory and a file name.
- The *Filter* can be used, for example, to control which interface or bus ID provides the data for the writer.

Details:

The detail view shows the complete configuration tree. The tree corresponds to the contents of the configuration file in JSON format. All components and functionalities of the ASU can be configured here.

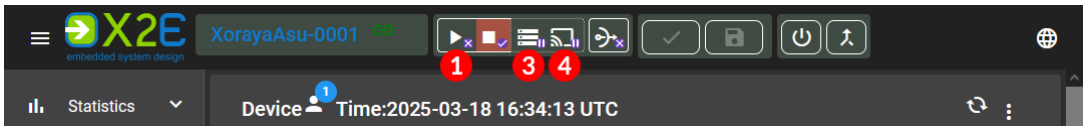


Number	Function
1	Browse tree and filter view
2	Fully expand/collapse tree
3	Executable functions with configurable parameters
4	Add element

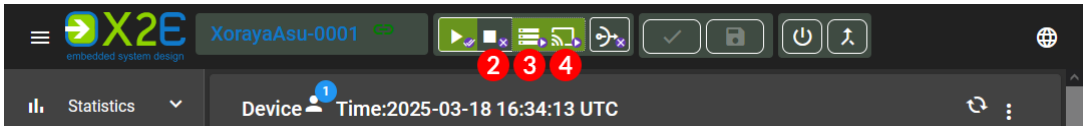
5.4 Data logging

The two logging modes can be activated independently of each other.

Start logging:



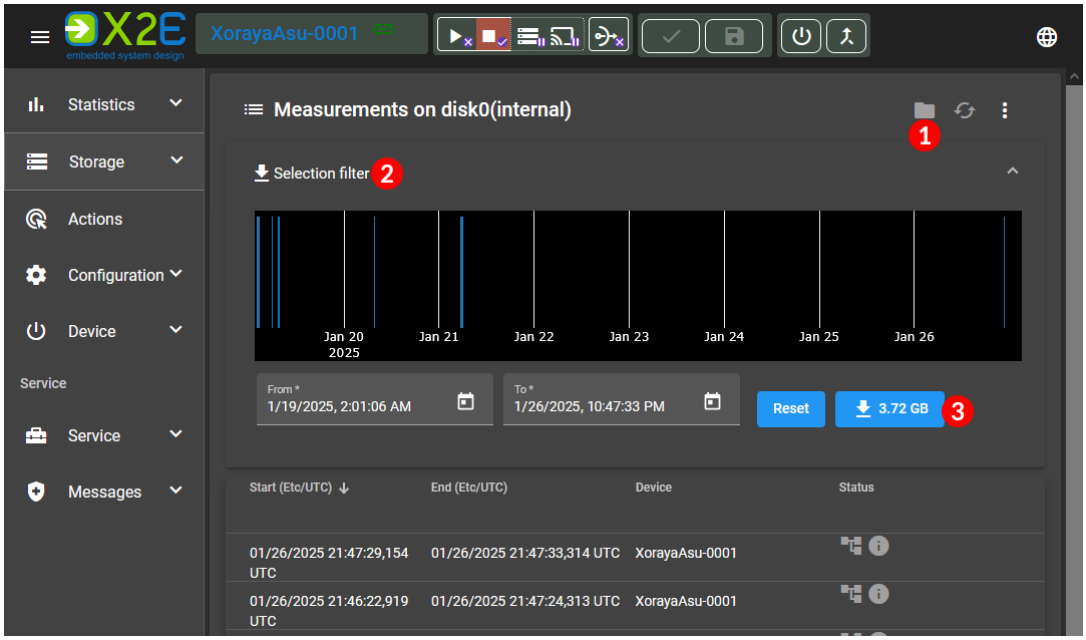
Stop logging:



Number	Function
1	Start logging on storage medium and start streaming
2	Stop logging and streaming
3	Start/stop logging on storage medium
4	Start/stop streaming

5.5 Measurements

Under *Storage* you get access to the measurements logged on the internal storage medium.



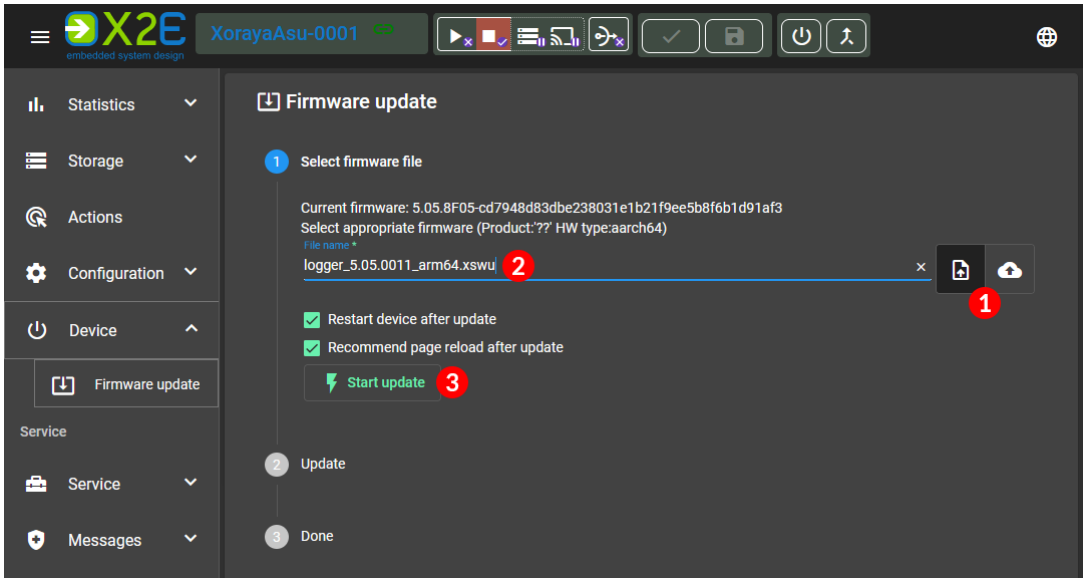
Number	Function
1	Open file view with folder structure
2	Open selection filter
3	Start download

In the selection filter you can either use drag and drop or use the calendar dialogs to specify the time range that contains the measurements that should be downloaded.

The size of the download is displayed on the *Start download* button **(3)**.

5.6 Firmware update

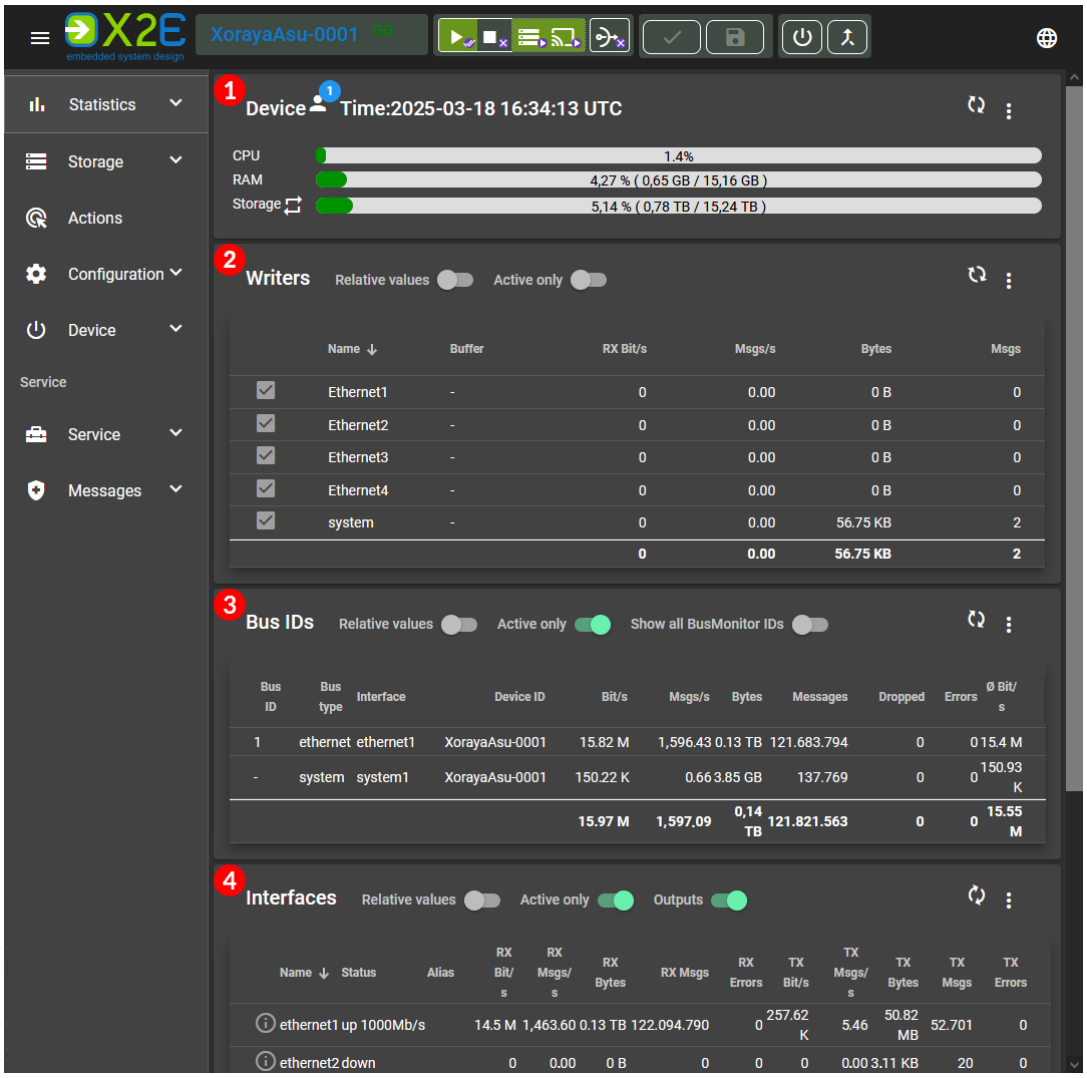
The interface for the firmware update can be found under both *Device* and *Service*. The update requires an XSWU file suitable for the device type.



Number	Function
1	Switch between file system or download URL
2	Open Explorer or paste path/URL
3	Start update

5.7 Statistics

The WebGUI default view shows the live statistics of the ASU.



Number	Function
1	General device statistics
2	Writers statistics
3	Bus IDs statistics
4	Interfaces statistics

You can view each category of statistics (writers, bus IDs, etc.) individually by expanding *Statistics* in the navigation menu on the left. In addition, the statistical data can be displayed as absolute values since switching the ASU on or as *Relative values* since activating the corresponding toggle switch.

6 Maintenance

6.1 Safety measures

DANGER

Electric shock caused by damage to components

Any damage to the ASU, power source or connection cable may cause an electric shock.

- ▶ Switch on the ASU only if all components appear undamaged.
- ▶ Only commission the ASU after a proper installation or repair.
- ▶ Check the connecting cable regularly for defects to prevent damage to the power source.
- ▶ Always install the ASU in de-energized status.

CAUTION

Device damage due to short circuit

Bent connector pins pose a short circuit risk. This can lead to abnormal behavior or destruction of the ASU.

Likewise, devices connected to the measurement setup may be also compromised.

- ▶ Make sure that connector pins are not bent.
- ▶ Check the ASU regularly for any deficiencies.

CAUTION

Safety defects due to incorrect accessories and spare parts

Accessories and spare parts that have not been recommended by X2E GmbH negatively affect the safety, functionality and precision of the ASU.

X2E GmbH shall assume no responsibility whatsoever or honor any warranty for damages arising from non-recommended accessories and spare parts or incorrect use.

- ▶ Use only accessories recommended by X2E GmbH and original spare parts.

6.2 Cleaning

CAUTION

Device damage due to pollution

Avoid any contamination in plugs and sockets to ensure a reliable contact.

- ▶ Keep the ASU clean.

Observe the following instructions to prevent damage to the ASU:

- Turn off the ASU and disconnect it from the power supply before you start cleaning.
- If necessary, clean the ASU with a damp, soft, lint-free cloth.
- Make sure that no moisture enters the housing, especially through the ventilation slots.
- Use only clear water and a mild detergent to moisten the cloth. Avoid sprays, solvents, alcohol or abrasive cleaners.
- Only reconnect the ASU to the power supply if the housing appears completely dry.

6.3 Repair

CAUTION

Device damage due to device opening

Unauthorized opening of the ASU can lead to abnormal behavior or destruction of the device.

- Never open the ASU.
- Contact X2E GmbH should maintenance and repairs be required.

Upon malfunction or defect, return the ASU without any accessories to X2E GmbH.

Before submission, please take the following measures:

- Clean the ASU. (➔ Cleaning)
- Pack the ASU safely in its original packaging.
- Include the completed return form. You can download this form from the X2E Wiki or receive via email upon request to xoraya-return@x2e.de.

7 Storage, transport and disposal

7.1 Storage

If the ASU will remain unused for an extended time, we recommend storing it in the original packaging.

Adopt the following precautions to avoid damage to the ASU:

- Protect the ASU from intense sun, heat, as well as from severe shocks.
- Do not place heavy objects on the ASU.
- Store the ASU in a dry, dust-free and ESD safe area.

7.2 Transport

Transport the ASU only in the original packaging.

7.3 Disposal

The Electrical and Electronic Equipment Act (ElektroG), which applies in Germany, obliges every manufacturer to create a reasonable option for returning old B2B devices.

X2E cannot take back so-called historical devices that were placed on the market before August 15th, 2018. In this case, the customer is responsible for professional disposal.

Return of old X2E devices

Old devices can be returned at the customer's expense to the following address:

X2E GmbH
Grosse Ahlmuehle 19
76865 Rohrbach
Germany
Phone: +49 6349 99599 211
E-mail: sales@x2e.de

If more than 10 devices are returned at the same time, X2E must be informed in advance by the customer via the above e-mail address.

Old devices to be returned must be clearly marked by the customer with the words "Disposal" or "Entsorgung".

Disposal of batteries

If the products contain batteries or lamps that can be removed from the old device without destroying them, you as the end user are legally obliged to remove them before disposal and dispose of them separately.

Make sure that you do not mechanically damage the removed battery, do not leave it in environments with extremely high temperatures and do not dispose of it in a fire. There is a risk of explosion.

Deletion of personal data

X2E expressly points out that the customer is responsible for deleting personal data on the devices to be disposed of.

Meaning of the symbol on the device

The crossed-out wheeled bin symbol on the device means that it must not be disposed of with household waste.

8 Appendix

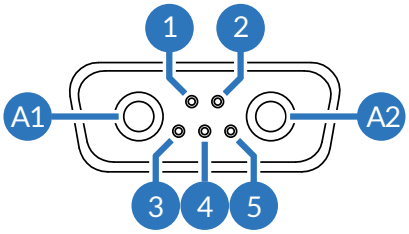
8.1 Technical data

Property	Value
Operating ambient temperature	-40 to +65 °C (with I-Temp SSD)
Operating air humidity	10 to 95 % (non-condensing)
Supply voltage (KL30)	12 V or 24 V (temporarily* from 6 to 32 V)
Supply voltage (USB PD)	Power Delivery Profile 4, 20 V/3 A
Operating current	Max. 3.7 A (at 12 V)
Charging current (powercaps)	Max. 4.5 A (at 12 V)
Standby current	Max. 1.3 mA (at 12 V)
Storage capacity	8/16/32 TB
Dimensions (H x W x D)	42 x 120 x 224 mm
Weight	1.5 kg
Housing protection type	IP 20, NEMA Type 1
Pollution degree	3
Altitude	Max. 2000 m

* temporarily = max. 20 s

8.2 Pin assignments

The following table lists the pin assignments of the 12V/Trigger/Wake port. The figure shows the external view of the contacts on the ASU.



Conec D-SUB Combination, M

Pin	Function
A1	GND
A2	VIN
1	*(reserved)*
2	Wake
3	Trigger/Wake GND
4	Trigger
5	*(reserved)*

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